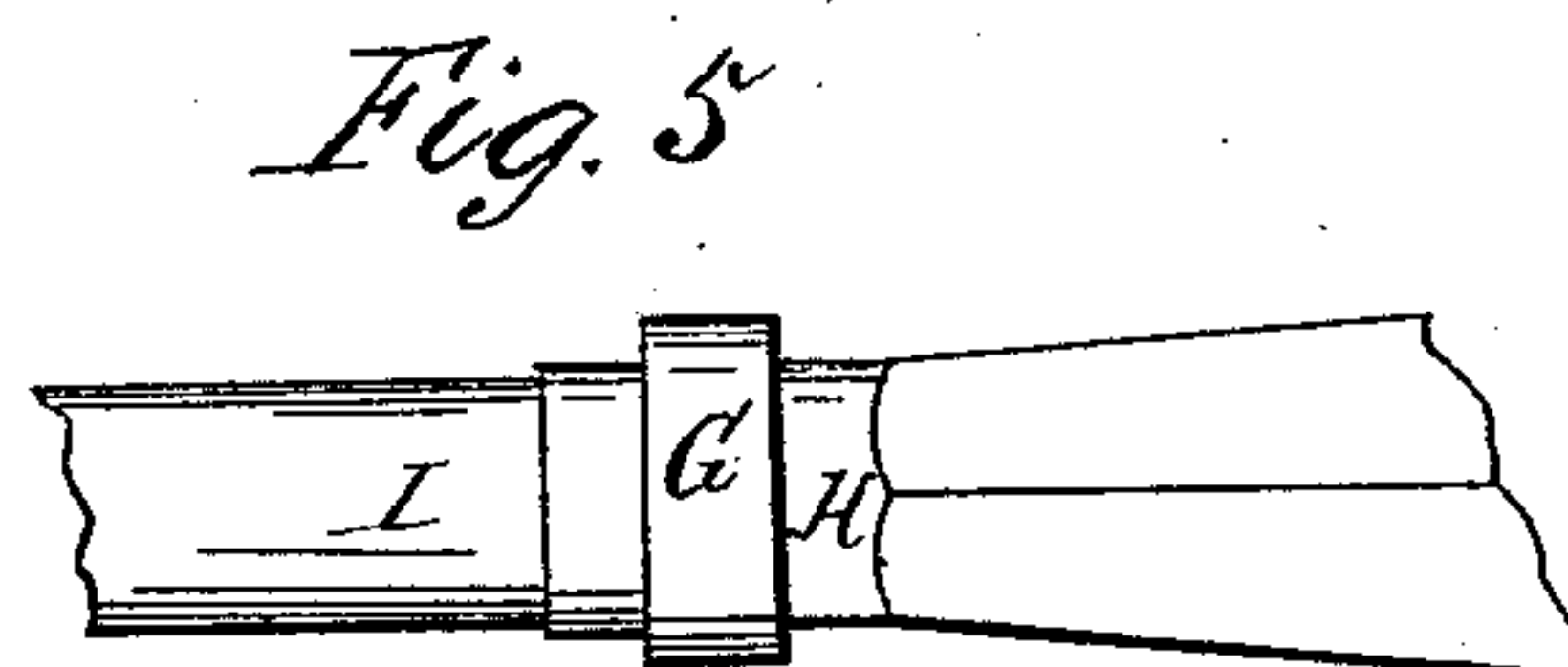
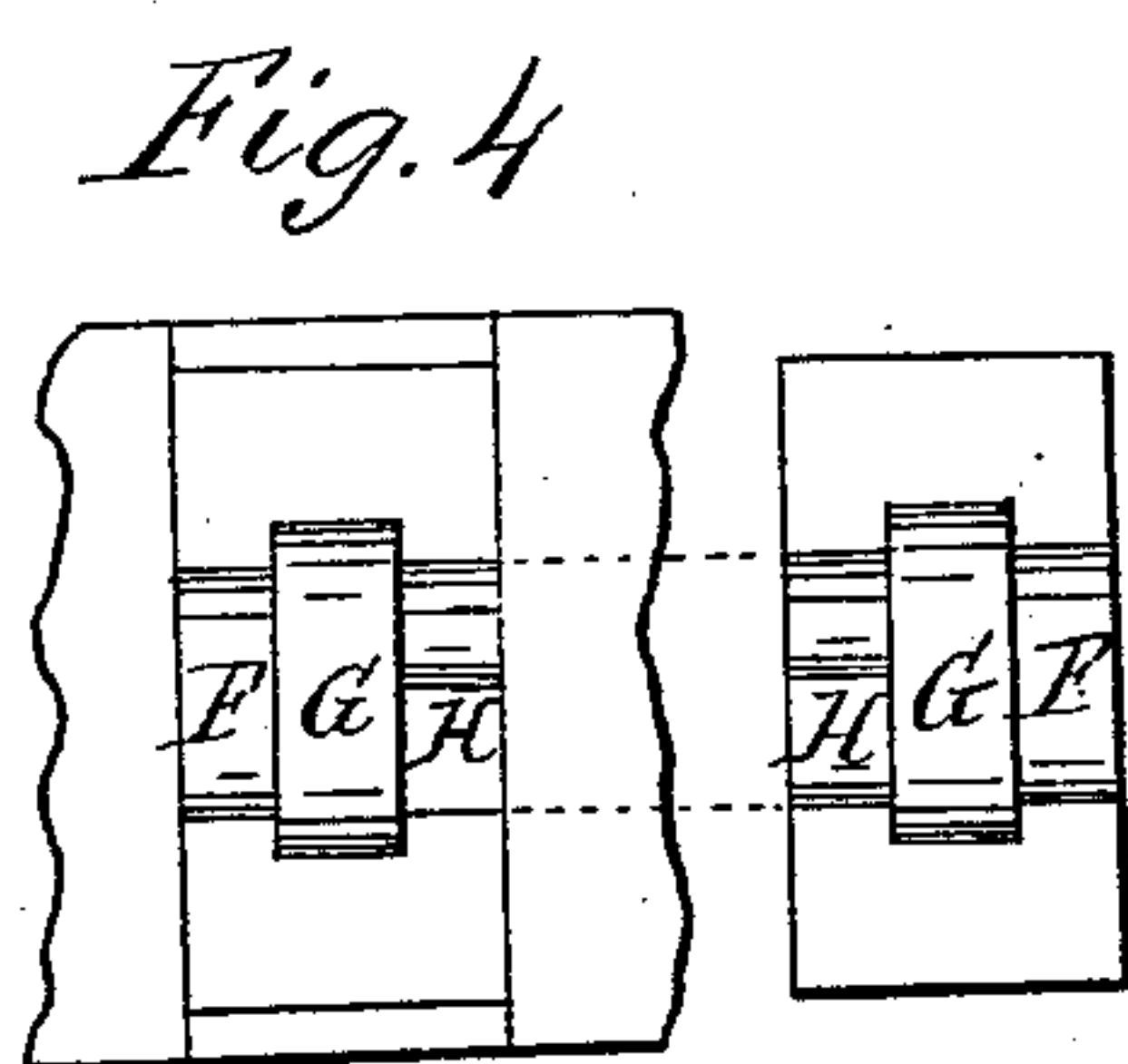
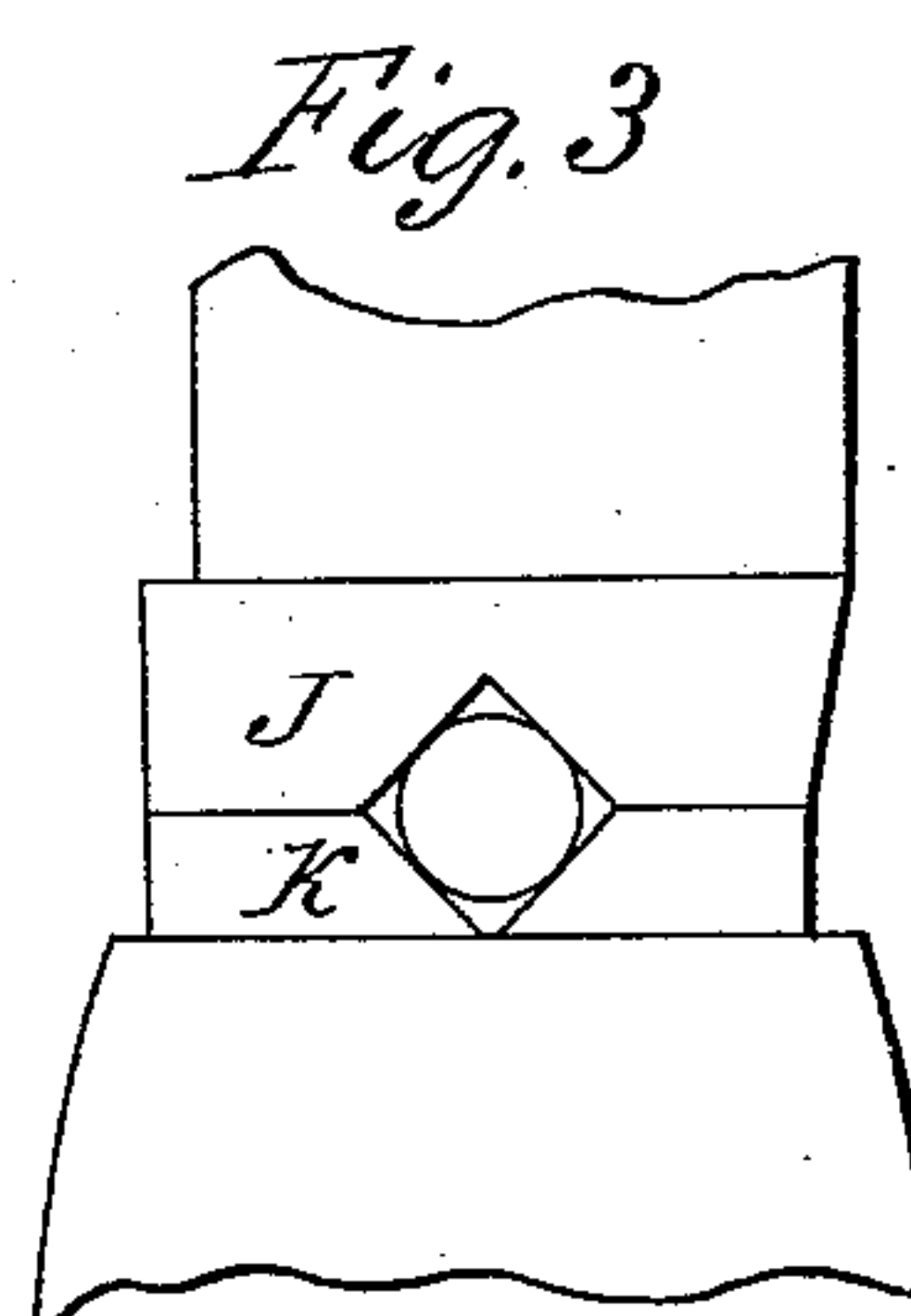
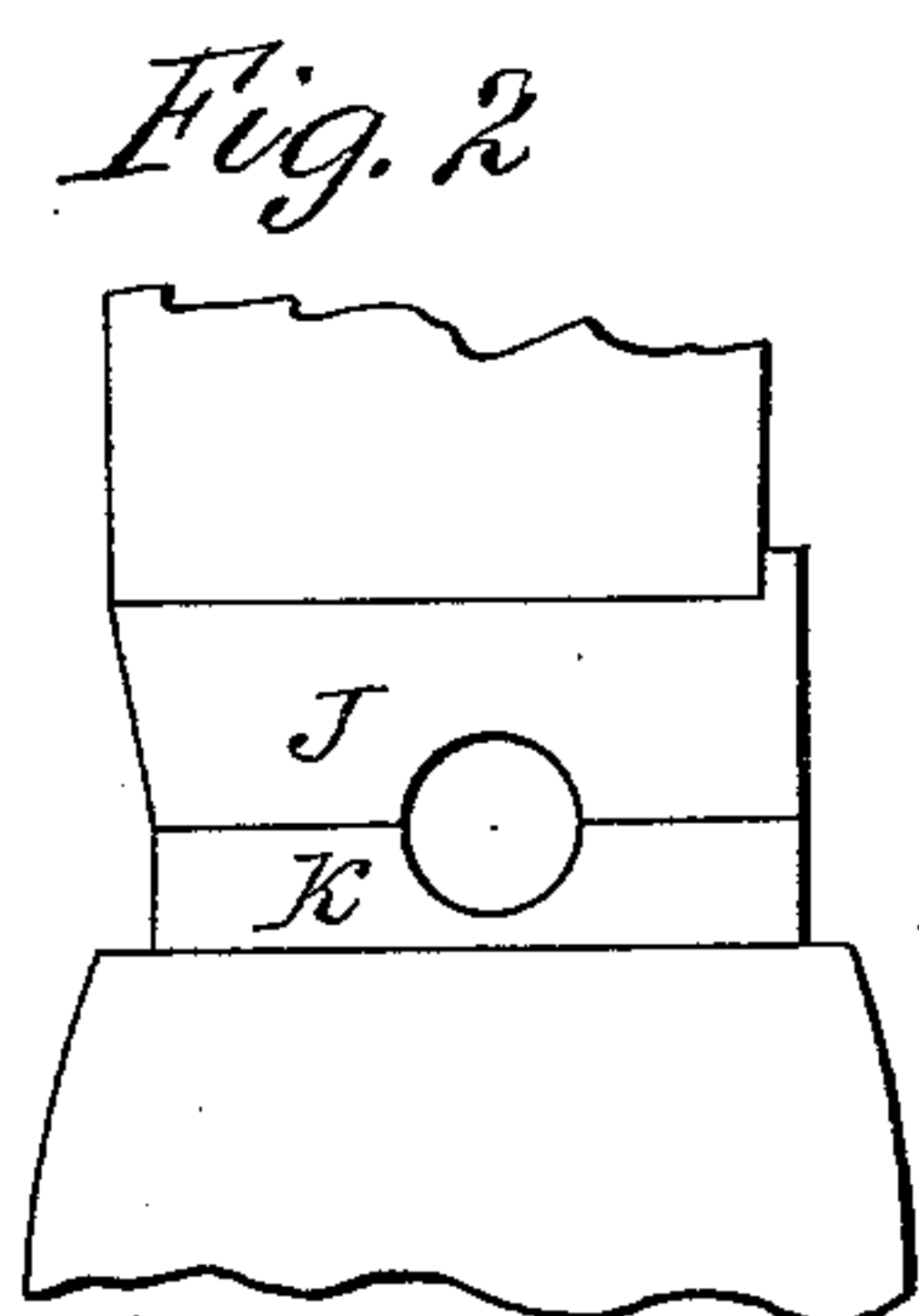
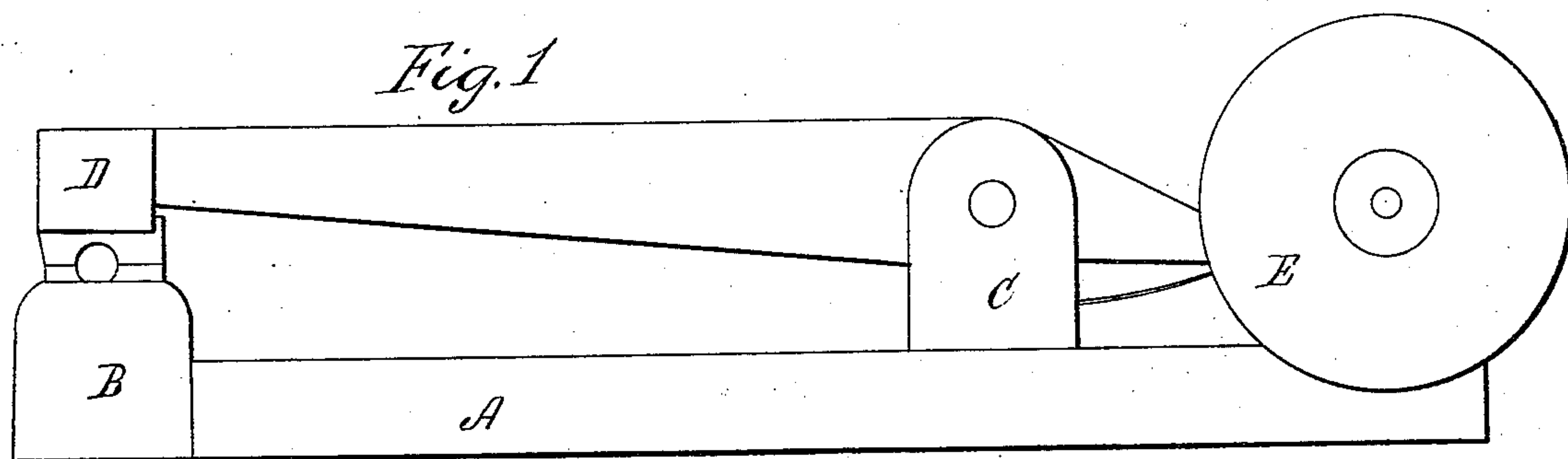


*L. L. Crane,*  
*Making Axles,*  
*N<sup>o</sup> 64,408.* *Patented May-7, 1867.*



*Witnesses;*  
*W. H. Burroughs*  
*Frank Alden*

*Inventor;*  
*Lockwood L. Crane*

# United States Patent Office.

L. L. CRANE, OF CLEVELAND, OHIO, ASSIGNOR TO HIMSELF AND LEAVETT, CRANE, AND CO., OF THE SAME PLACE.

*Letters Patent No. 64,408, dated May 7, 1867.*

## IMPROVED FORGING MACHINE.

*The Schedule referred to in these Letters Patent and making part of the same.*

### TO ALL WHOM IT MAY CONCERN:

Be it known that I, L. L. CRANE, of Cleveland, in the county of Cuyahoga, and State of Ohio, have invented certain new and useful Improvements in Forging Hammer Dies; and I do hereby declare that the following is a full and complete description of the same, reference being had to the accompanying drawings, making a part of this specification, in which—

Figure 1 is a side view of the hammer.

Figure 2, a side view of a die.

Figure 3, the reverse side of fig. 2.

Figure 4, a top view of the die.

Figure 5, a view of the forged work.

Like letters of reference refer to like parts in the different views.

A, fig. 1, is the bed of the hammer; B, the block in which the lower die is set; C, the cheeks between which the helve is mounted; D, the head in which the upper die is set; E is a pulley, by which the shaft and trips are driven, and which is constructed and operated in the ordinary way. The die referred to is constructed with three forms, F, G, and H, fig. 4, of which F is a round form, shown also in fig. 2. This form shapes the end of the axle I, fig. 5, upon which the wheel runs. G forms the enlargement or inside shoulder or collar, against which the hub rests, and is kept from intruding upon the axle-tree. H is a square form, shown also in fig. 5, by which the tree immediately back of the shoulder is shaped and brought to a proper size, which may be more or less, according to the strength of the tree required. By thus making the die in the specified number of forms the axle can be forged at once, thereby saving the labor and time required to forge each part of the axle separately, as is done in the ordinary way. Also, it can be forged truer, for the reason that the die being properly proportioned, and each part made central or true with each other, the work must, as a consequence, be equally true; hence there is a less waste of iron in turning the axle down so as to fit the boxes. The dies are made in two sections, J and K, as seen in figs. 2 and 3, and which may be operated by other means than as specified.

What I claim as my improvement, and desire to secure by Letters Patent, is—

The dies J K, constructed as described, in combination with the anvil and trip-hammer B D, all arranged and operating as set forth.

L. L. CRANE.

Witnesses:

W. H. BURRIDGE,

E. E. WAITE.